

2021 WSEC-C Section C403.5 Exception 1

Public Comments from Eric Vander Mey (ericv@rushingco.com)

Please consider the comments below. Based on the Energy Code TAG discussion Exception 5 is available for Group R-2 units that are required to have ventilation from ERV so Exception 1 was removed.

Since this time some of the small packaged PTHP units with inverter driven compressors have gone through AHRI testing. The Epocha HPAC units for example **do NOT** meet the 15% higher than code minimum efficiency. During the TAG process these units were thought that they would comply with this requirement.

Airside economizers are costly to install and are not recommended for small residential unit.

High efficiency mechanical cooling units have limited impact in Washington due to lower summer outdoor air design conditions and lower internal loads in Group R-2 occupancies.

In order to allow for cost effective cooling and heat pump system installations for Group R-2 occupancies I recommend the SBCC consider one of the following two options:

- Option #1: Delete added reference to "For other than Group R-2 occupancies" of Exception 2.
- Option #2: Add an additional exception for Group R-2 that install ERV with higher ERV effectiveness that base Group R-2 requirements of 60% sensible recovery or 60% enthalpy recovery heating effectiveness (Exception 3 of Section C403.3.5.1 is not utilized). See proposed language below.

C403.5 Economizers. Air economizers shall be provided on all new cooling systems including those serving computer server rooms, electronic equipment, radio equipment, and telephone switchgear. Economizers shall comply with Sections C403.5.1 through C403.5.5.

EXCEPTIONS: 1. a. For other than Group R-2 occupancies, cooling system(s) where the supply fan is not installed ((outdoors)) outside the building thermal envelope nor in a mechanical room adjacent to outdoors, and is installed in conjunction with DOAS complying with Section C403.3.5 and serving only spaces with year-round cooling loads from lights and equipment of less than 5 watts per square foot.

1. b. For Group R-2 occupancies, cooling system(s) where the supply fan is not installed outside the building thermal envelope nor in a mechanical room adjacent to outdoors, and is installed in conjunction with DOAS complying with Section C403.3.5, where the ERV/HRV a minimum 68% sensible recovery or 60% enthalpy recovery heating effectiveness (Exception 3 of Section C403.3.5.1 is not utilized), and serving only spaces with year-round cooling loads from lights and equipment of less than 5 watts per square foot.

2. Unitary or packaged systems serving one zone with dehumidification that affect other systems so as to increase the overall building energy consumption. New humidification equipment shall comply with Section ((C403.3.2.5)) C403.3.2.7.

3. Unitary or packaged systems serving one zone where the cooling efficiency meets or exceeds the efficiency requirements in Table C403.5.

4. Equipment serving chilled beams and chilled ceiling space cooling systems only which are provided with a water economizer meeting the requirements of Section C403.5.4.

5. For Group R occupancies, cooling unit(s) where the supply fan is not installed ((outdoors)) outside the building thermal envelope or in a mechanical room adjacent to outdoors with a total cooling capacity less than 20,000 Btu/h and other cooling units with a total cooling capacity less than 54,000 Btu/h provided that these are high-efficiency cooling equipment with IEER, CEER, SEER, and EER values more than 15 percent higher than minimum efficiencies listed in ((Tables C403.3.2(1) through (3)) the tables in Section C403.3.2 or an IPLV kW/ton that is at least 15 percent lower than minimum efficiencies listed in Table C403.3.2(3) or Table C403.3.2(15), in the appropriate size category, using the same test procedures. Equipment shall be listed in the appropriate certification program to qualify for this exception. For split systems, compliance is based on the cooling capacity of individual fan coil units.

Commented [EVM1]: Recommending removing "For other than Group R occupancies."

If this code change amendment is maintained then recommend adding a new DOAS exception 1.b. for Group R-2 occupancies that comply with 68% effective ERV/HRV and in parallel to allow Group R-2 to have similar exception as other than Group R-2.

Commented [EVM2]: Added new 1.b. exception for Group R-2 occupancies that requires a higher ERV effectiveness than R-2.

Commented [EVM3]: This section needs editorial corrections as it was extended to all the various equipment efficiency tables. Therefore, this would now include the following cooling equipment: Water cooled Chillers, Air-to-water heatpumps, and Heat recovery chillers that are rated on kW/ton

Does this apply to heat rejection equipment efficiencies of Table C403.3.2(7) or is that on considered cooling equipment?